

WHAT IS CLAIMED AND DESIRED TO BE SECURED BY LETTERS
PATENT OF THE UNITED STATES IS:

1. A method for locking onto a downstream frequency by a
5 wireless modem in a broadband wireless access system comprising:

receiving at a radio coupled to the wireless modem, a plurality of signals at least one corresponding to a downstream signal being transmitted on a downstream frequency;

10 determining, at the wireless modem, if the radio is locked onto the at least one downstream signal received at the radio;

15 if the radio is locked onto the downstream signal, determining a center frequency of a detected frequency range corresponding to the downstream signal;

if the radio is not locked onto the downstream data signal, changing a receiving frequency of the radio by signals from the wireless user device according to a predetermined frequency plan until the receiver is locked onto the one downstream signal and then determining the center frequency of the detected frequency range;

20 determining a frequency offset factor; and

transmitting an instruction from the wireless modem to the radio to operate a frequency other than the center frequency, the frequency other than the center frequency being a function of the frequency offset factor and center frequency.

2. The method of Claim 1, wherein the predetermined frequency plan comprises altering the frequency of the radio by a plurality of steps, each of the steps comprising a first frequency and a second frequency, the first frequency being greater than the predetermined frequency and the second frequency being less than the predetermined frequency.

3. The method of Claim 2, wherein the first and second frequency are separated from the predetermined frequency by approximately a same distance.

4. The method of Claim 3, wherein for each frequency step the same distance is approximately a multiple of the same distance of a prior frequency step of the plurality of frequency steps.

5. The method of Claim 1, wherein the offset factor is approximately equal to the center frequency divided by the predetermined frequency.

6. The method of Claim 5, wherein the receiver is coupled to a transmitter that transmits upstream signals from the wireless user device, the method further comprising offsetting a

transmit frequency of transmitter circuitry located in the wireless user device according the frequency offset factor.

7. The method of Claim 5, wherein the wireless user device
5 provides signals for upstream transmission to a transmitter that transmits at an upstream frequency, the method further comprising offsetting the upstream frequency according to the offset factor.

10 8. The method of Claim 7, wherein the wireless user device makes correction for the downstream frequency, based on corrections for the upstream frequency that are received from the hub.

15 9. A method for compensating for signal power reduction in a wireless modem, comprising:

determining a power of a received signal at a transceiver in a first downstream time slot, the power of the received signal being determined at a wireless modem coupled with the
20 transceiver;

if the power of the received signal is within a predetermined range, instructing the transceiver to transmit in a first upstream time slot a message at a predetermined upstream power;

if the power of the received signal is outside the predetermined range, then transmitting in the first upstream time slot the message at a power that is the upstream power plus or minus the difference between the predetermined range and the 5 power level of the received signal in the first downstream time slot;

10 determining a power of a received signal at a transceiver in second downstream time slot, the power of the received signal being determined at a wireless modem coupled with the transceiver;

15 if the power of the received signal in the second downstream time slot is within a predetermined range, instructing the transceiver to transmit in a second upstream time slot a message at a predetermined upstream power;

20 if the power of the received signal is outside the predetermined range, then transmitting in the first upstream time slot the message at a power that is the upstream power plus or minus the difference between the predetermined range and the power level of the received signal in the second downstream time slot; and

ceasing upstream transmission from the transceiver until power correction information is received at the transceiver.

10. The method of Claim 9, further comprising a step of receiving a signal from a wireless modem termination station indicative of a request to transmit during the first upstream time slot at another power level, the step of if the power of
5 the received signal is outside the predetermined range, comprising the step of transmitting in the first upstream time slot the message at the another power level.

11. The method according to Claim 1, wherein:

10 said method is embodied in a set of computer readable instructions stored on a computer readable media; and

15 said computer readable instructions, when loaded into a computer and executed, cause the computer to perform the steps of Claim 1.

12. The method according to Claim 9, wherein:

10 said method is embodied in a set of computer readable instructions stored on a computer readable media; and

15 said computer readable instructions, when loaded into a computer and executed, cause the computer to perform the steps of Claim 9.

20 13. A device for locking onto a downstream frequency, comprising:

a radio configured to,
receive a plurality of signals, at least one of said plurality of signals being transmitted on said downstream channel,

5 detect a center frequency of said downstream channel,
determine an offset of said downstream frequency compared to a nominal frequency,
adjust a frequency so the offset is eliminated.

10 14. The device according to Claim 13, wherein said radio is further configured to transmit an instruction to a transmitting device to adjust, corresponding to said offset, a frequency on which said downstream channel is being broadcast.

15 15. The device according to Claim 13, wherein the frequency adjusted is an output frequency of a frequency generator used by a receiver device of said radio.

20 16. The device according to Claim 15, wherein said frequency generator is a PLL of said receiver.

17. The device according to Claim 13, wherein said radio is part of a wireless modem in a broadband wireless access system.

18. A device for compensating for signal power reduction, comprising:

5 a power expectation device configured to determine an expected power level of a received signal;

a power detection mechanism configured to determine an amount of power in a received signal;

10 a calculation configured to determine if the power of the received signal is within a predetermined range of the expected power level and determine a variance between the expected power and received power level; and

15 a transmitter control device configured to adjust an amount of power used to transmit a signal based on the variance if the received power is outside the predetermined range.

19. The device according to Claim 18, wherein said device compensates for signal power reductions in a wireless modem of a broadband wireless access system.

20. The device according to Claim 18, wherein said transmitter control device maintains the adjusted amount of power for a predetermined time period.

21. The device according to Claim 20, wherein said predetermined time period is between 500 and 2250 msec.

22. The device according to Claim 18, wherein the adjusted 5 amount of power is equivalent to a difference between the power of the received signal and the expected power.